



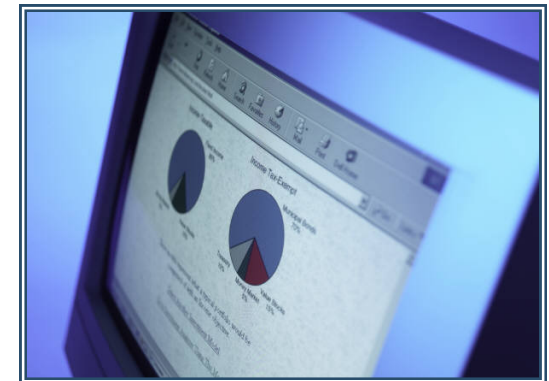
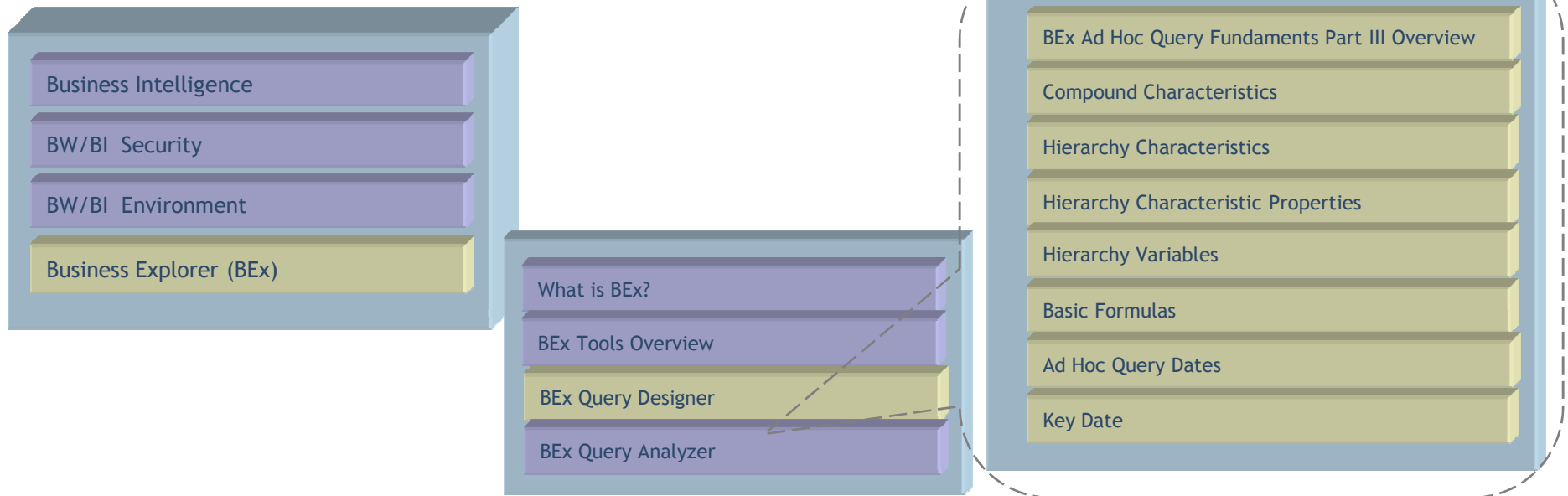
## **SAP Business Warehouse/Business Intelligence Reporting**

# **BEx Ad Hoc Query Fundamentals - Part III**

Washington State HRMS Business  
Warehouse/Business Intelligence (BW/BI)  
BW/BI Power User Workshop Materials  
General Topics - BW/BI Power Users

# BEx Ad Hoc Query Fundamentals – Part III

The following BEx Ad Hoc Query Fundamentals - Part III section provides an overview of BEx Ad Hoc Query Fundamentals and builds on the key terms and concepts covered in BEx Query Fundamentals - Part I and Part II.



# BEx Ad Hoc Query Fundamentals – Part III Overview

BEx Ad Hoc Query Fundamentals - Part III contains the following key terms and concepts:

- Compound Characteristics
- Hierarchy Characteristics
- Hierarchy Characteristic Properties
- Hierarchy Variables
- Basic Formulas
- Ad Hoc Query Dates
- Key Date

Ad Hoc Query Dates

The screenshot displays the BEx Query Designer interface with the following components and annotations:

- InfoProvider:** Shows a tree structure under 'Headcount and Personnel A'. The 'Time' dimension is expanded, showing 'Cal. Year/Quarter', 'Calendar Day', 'Calendar month', 'Calendar Year', 'Calendar Year/Month', 'Quarter', and 'Unit'. A red bracket groups the 'Calendar Year', 'Calendar Year/Month', and 'Quarter' items, with a callout box labeled 'Ad Hoc Query Dates'.
- Filter:** Contains 'Characteristic Restriction' with 'Personnel Area' and 'Default Values' with 'Ethnic Origin', 'Organizational Unit', 'Pay Scale Group', 'Pay Scale Type', 'Pay Scale Area', and 'ES Grouping for CAP'. A callout box labeled 'Hierarchy Characteristic' points to the 'Organizational Unit' in the 'Default Values' list.
- Rows/Columns:** The 'Free Characteristics' section contains 'Ethnic Origin'. The 'Columns' section contains 'Key Figures' with 'Number of Employees', 'Number of Female Employees', and 'Avg Number of Female Employee'. A callout box labeled 'Basic Formula' points to the 'Avg Number of Female Employee' key figure.
- Properties:** A callout box labeled 'Compound Characteristics' points to the 'Organizational Unit', 'Pay Scale Group', 'Pay Scale Type', 'Pay Scale Area', and 'ES Grouping for CAP' items in the 'Rows' section.
- Properties Pane (Bottom Right):** Shows the 'Demo PU Workshop (Query)' properties. The 'Key Date' field is highlighted with a red box, and a callout box labeled 'Key Date is set in the Properties Pane' points to it.

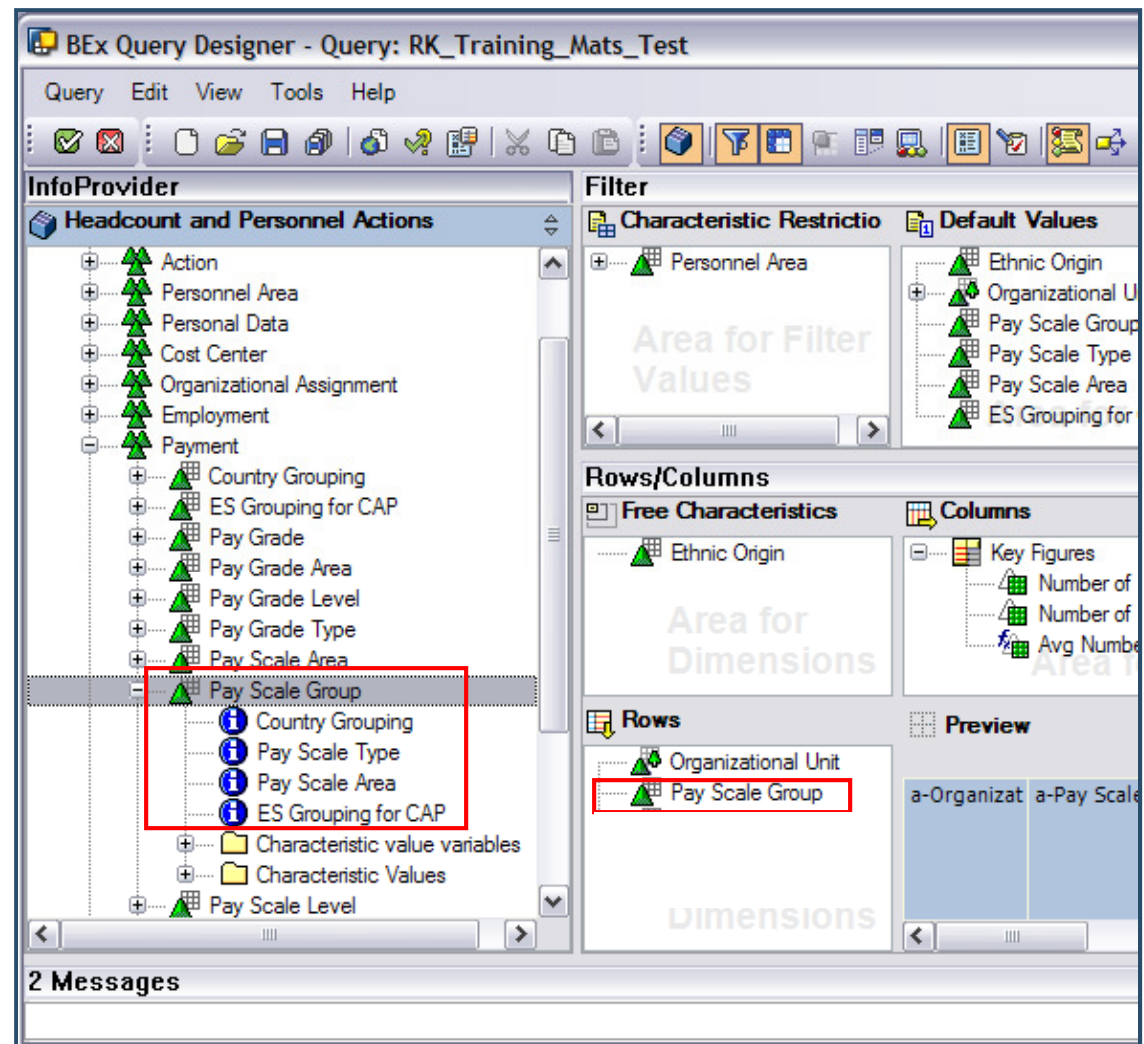
# Compound Characteristics

Compound Characteristics are part of a group of Characteristics that are dependent on one another.

For example, the Pay Scale Group Characteristic is a Compound Characteristic that is compounded with the following Characteristics:

- Country Grouping
- Pay Scale Area
- Pay Scale Type
- ES Grouping for CAP (Employee Subgroup Grouping for Collective Agreement Provisions)

If Pay Scale Group is added to the query, all of its related Characteristics listed above are automatically included in the report results.



# Compound Characteristics

In the example below, the Pay Scale Group Characteristic has been added to the ad hoc query. Country Grouping, Pay Scale Type, Pay Scale Area and ES Grouping for CAP are automatically added to the report results since they are Compounded with Pay Scale Group.

- To remove the Compound Characteristic data from the report, right click on “Pay Scale Group”, select “Properties” → “Characteristic”.
- In the Properties box, click on the “Display” dropdown arrow and select one that says “Not Compounded). This will remove the data for the Compound Characteristic from the results.

The screenshot illustrates the steps to remove compound characteristics from a report in SAP BW/BI. It shows the 'RK\_Training\_Mats\_Test' report with a table view. A right-click context menu is open over the 'Pay Scale Group' column, with 'Properties' selected. The 'Properties of Characteristic Pay Scale Group (Result Set Context)' dialog box is open, showing the 'General' tab. The 'Display' dropdown is set to 'Key (Not Compounded)'. The 'Pay Scale Group' column is highlighted in red in the table view, and the 'Pay Scale Group without Compound Characteristics' column is highlighted in red in the 'Properties' dialog box.

**Table Data (Pay Scale Group with Compound Characteristics):**

Pay Scale Group	Pay Scale Type	Pay Scale Area	ES Grouping for CAP
10/##/##/##	10/##	10/##	10/##
10/##/##/##	10/##	10/##	10/##
10/##/##/##	10/##	10/##	10/##
10/00/01/1/28	10/01	10/01	10/01
10/00/01/1/31	10/01	10/01	10/01
10/00/01/1/35	10/01	10/01	10/01
10/00/01/1/42	10/00	Non-Repres	10/00

**Table Data (Pay Scale Group without Compound Characteristics):**

Pay Scale Group
#
#
#
21
22
25
27

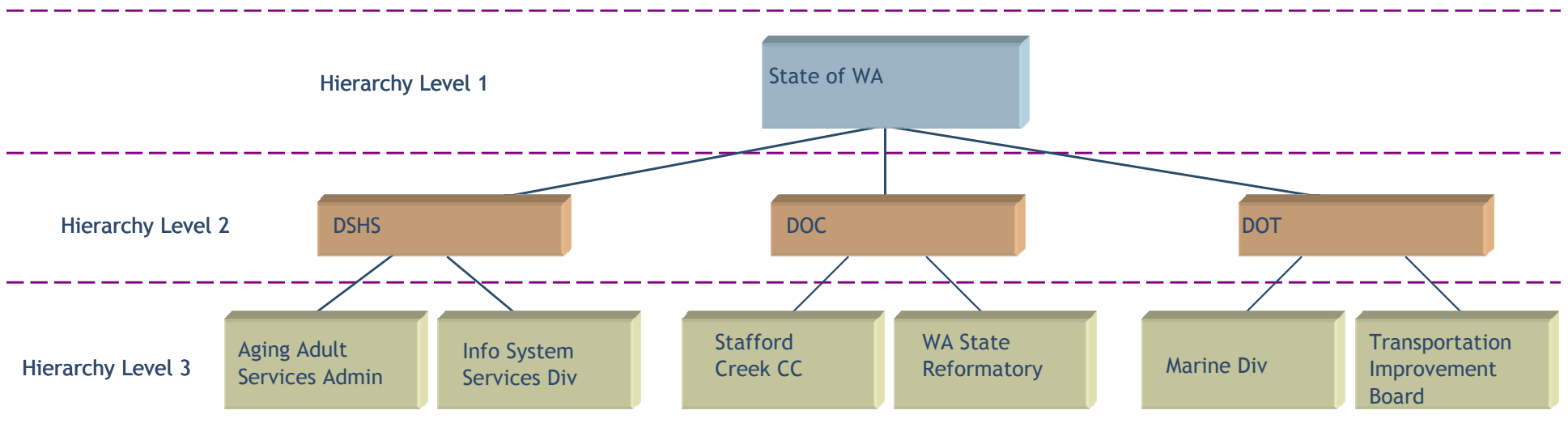
# Hierarchy Characteristics

**Hierarchy Characteristics** are Characteristics arranged in a tree structure. In BW/BI , the only hierarchy is the Organizational Unit Hierarchy.

The Organizational Unit Hierarchy allows the user to select a “parent” Organizational Unit (such as State of WA or DOC in the example below) and include all the “child” Organizational Units that are beneath it when the ad hoc query is run.

The example below represents the Organizational Unit Hierarchy structure with each box representing a different Organizational Unit. These Organizational Units are arranged hierarchically with the State of Washington being the highest level, and Agencies below.

## Sample Organizational Unit Hierarchy Structure



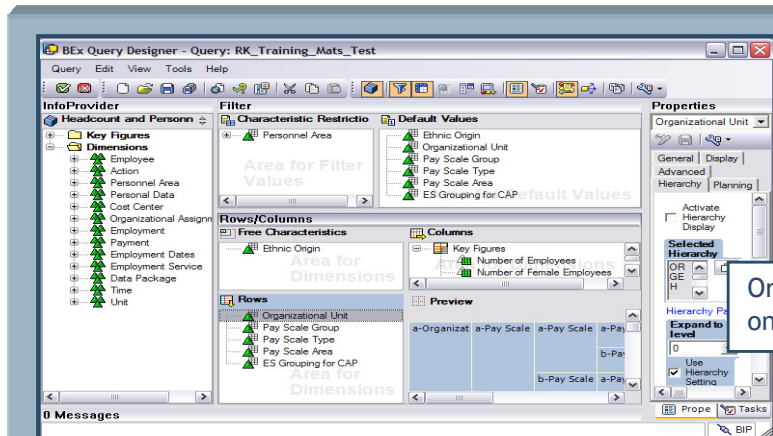


# Hierarchy Characteristics

The example below shows the difference between using the Organizational Unit Characteristic and the Organizational Unit Characteristic with the Hierarchy in the ad hoc query.

Organizational Unit in Query (w/out Hierarchy)

Query Results for Organizational Unit (w/out Hierarchy)

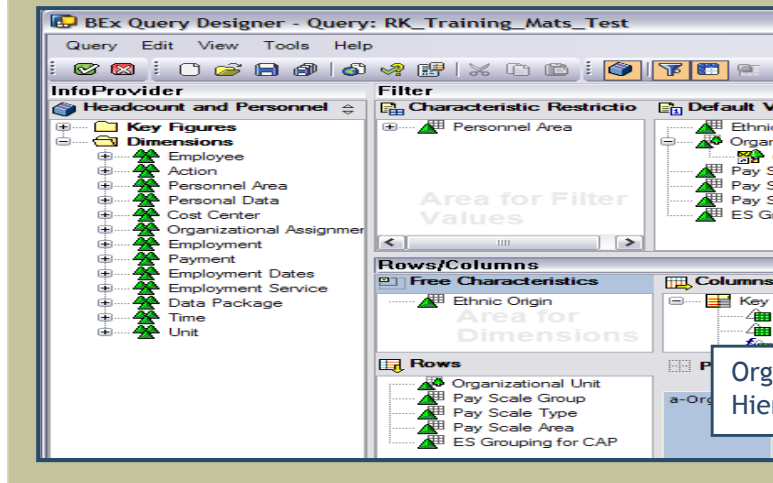


Organizational Unit	Pay Scale Group	Pay Scale Type	Pay Scale
30000510	10/00/01/3/58	10/00	Non-Represented
30000515	10/00/01/3/66	10/00	Non-Represented
DA	10/##/##/##	10/##	10/Not assigned
	10/##/##/3/##	10/##	10/Not assigned
	10/00/01/1/44	10/00	Non-Represented
	10/00/01/1/48	10/00	Non-Represented
	10/00/01/1/50	10/00	Non-Represented
	10/00/01/1/54	10/00	Non-Represented

Organizational Unit only

Organizational Unit Hierarchy in Query

Query Results for Organizational Unit Hierarchy



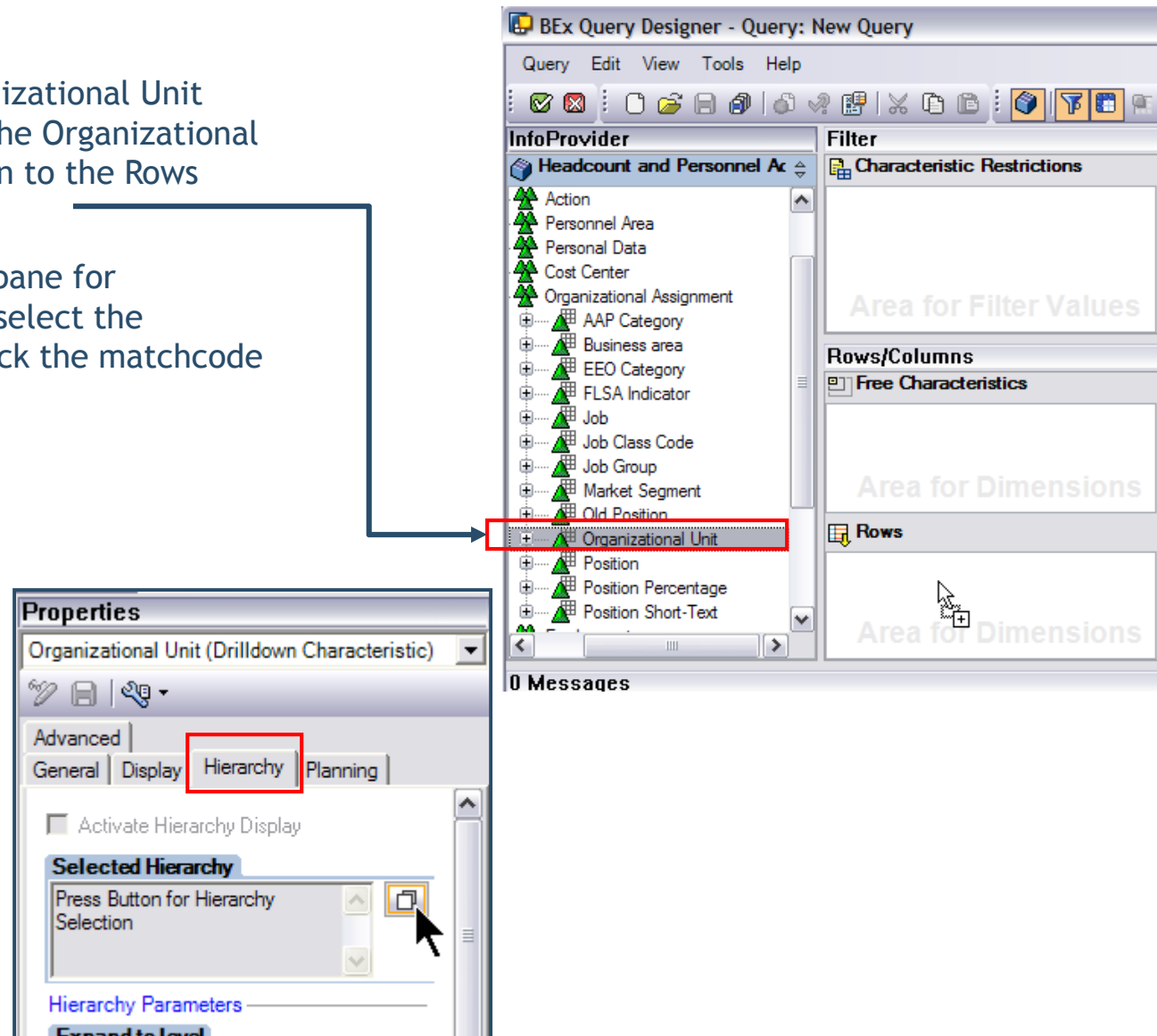
Organizational Unit	Pay Scale Group	Pay Scale Type	Pay Scale
▼ SOW	10/00/01/3/55	10/00	Non-Represented
	10/00/01/3/56	10/00	Non-Represented
	10/00/01/3/58	10/00	Non-Represented
	10/00/01/3/62	10/00	Non-Represented
	10/00/01/3/66	10/00	Non-Represented
	10/00/01/3/70	10/00	Non-Represented
	10/00/07/3/27G	10/00	Non-Represented
	10/00/07/3/35G	10/00	Non-Represented
	10/00/07/3/41G	10/00	Non-Represented
	10/01/01/3/58	10/01	WFSE
► 111	10/##/##/##	10/##	10/Not assigned
	10/##/##/1/##	10/##	10/Not assigned

Organizational Unit Hierarchy

# Hierarchy Characteristics

To make the Organizational Unit Characteristic a Hierarchy:

1. Drag&Drop the Organizational Unit Characteristic from the Organizational Assignment Dimension to the Rows section of the query.
2. From the Properties pane for Organizational Unit, select the Hierarchy tab and click the matchcode button.

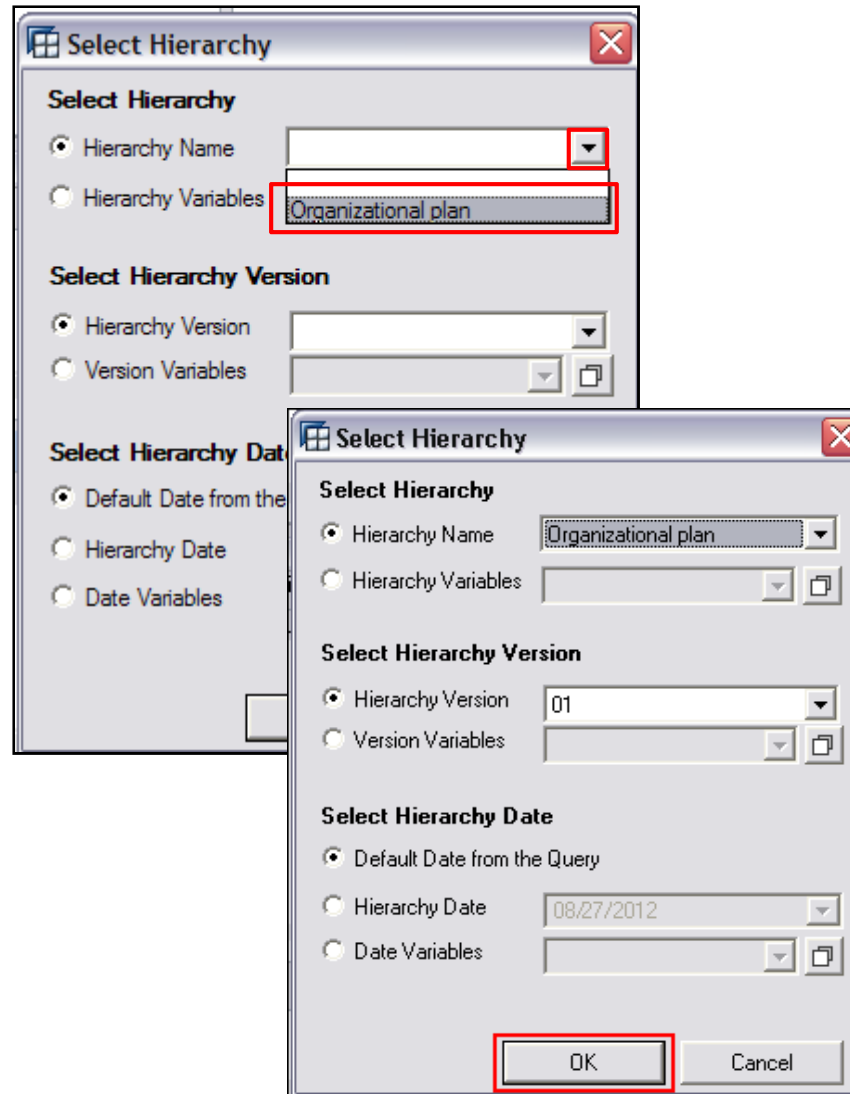




# Hierarchy Characteristics

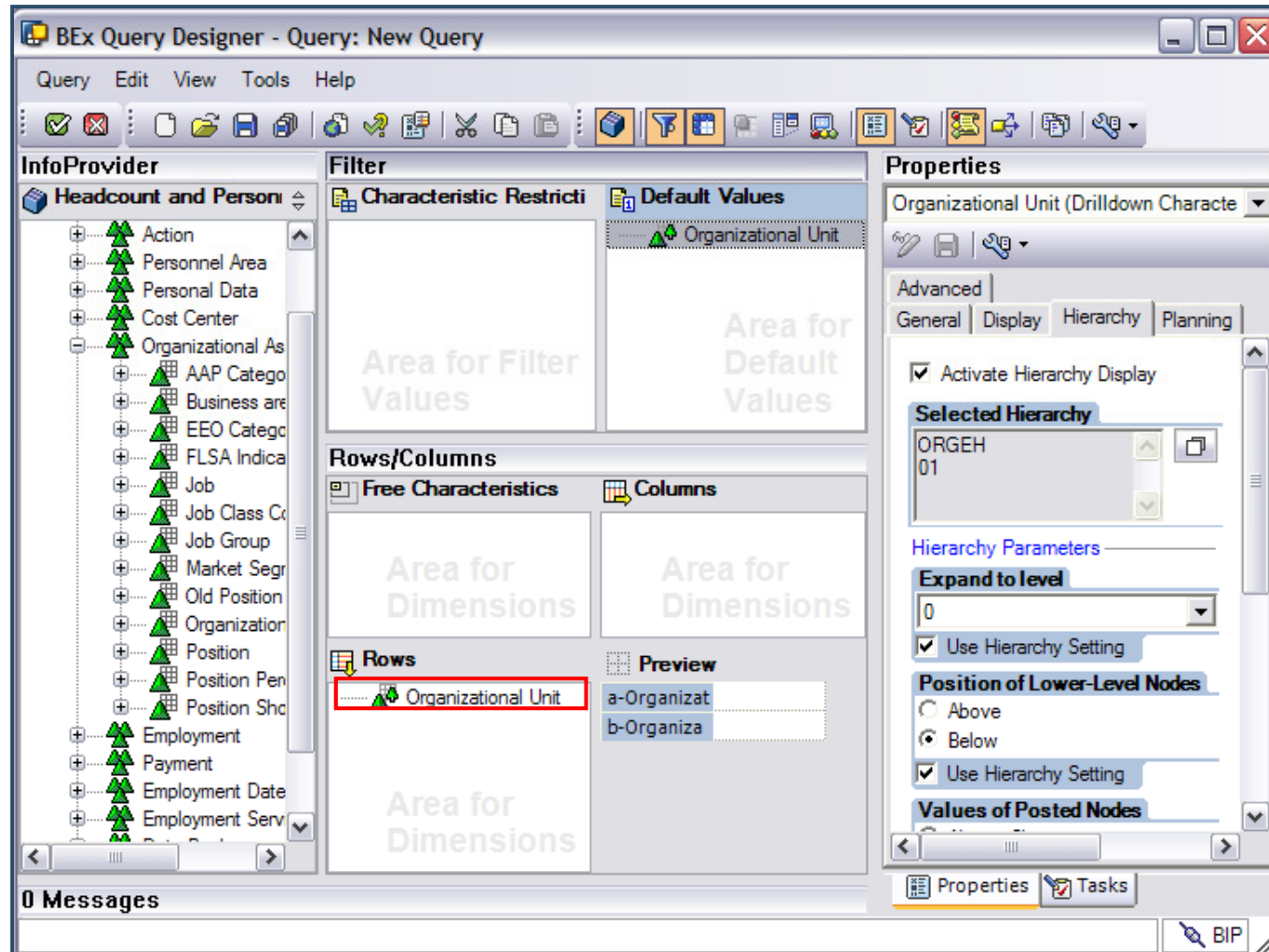
To make the Organizational Unit Characteristic a Hierarchy:

3. Click on the dropdown in the Hierarchy Name text box and select the Hierarchy (there is only one).
4. Version and Date have default values. These can be left as default.
5. Click OK.



# Hierarchy Characteristics

Result: The Organizational Unit Characteristic has been changed to Organizational Unit Hierarchy.



# Hierarchy Characteristic Properties

The **Hierarchy Characteristic Properties** become available when a Hierarchy becomes enabled.

The example below provides a brief description of the Display Hierarchy property settings (other property settings are defined in the Characteristics Properties section):

The image displays two screenshots of the 'Properties' dialog box for 'Organizational Unit (Drilldown Characteristic)'. The left screenshot shows the 'Hierarchy' tab, and the right screenshot shows the 'Display' tab. Annotations provide context for various settings.

**Left Screenshot (Hierarchy Tab):**

- Turn Hierarchy on or off:** Points to the 'Activate Hierarchy Display' checkbox, which is checked.
- Select the Hierarchy:** Points to the 'Selected Hierarchy' list, which contains 'ORGEH 01'.
- Specify how many levels the Hierarchy should expand to on execution (Expand to level 1 to rollup Hierarchy on startup):** Points to the 'Expand to level' dropdown, which is set to '0'.

**Right Screenshot (Display Tab):**

- Sort the Hierarchy: Ascending / Descending:** Points to the 'Sort by' dropdown, which is set to 'As in the Hierarchy'.

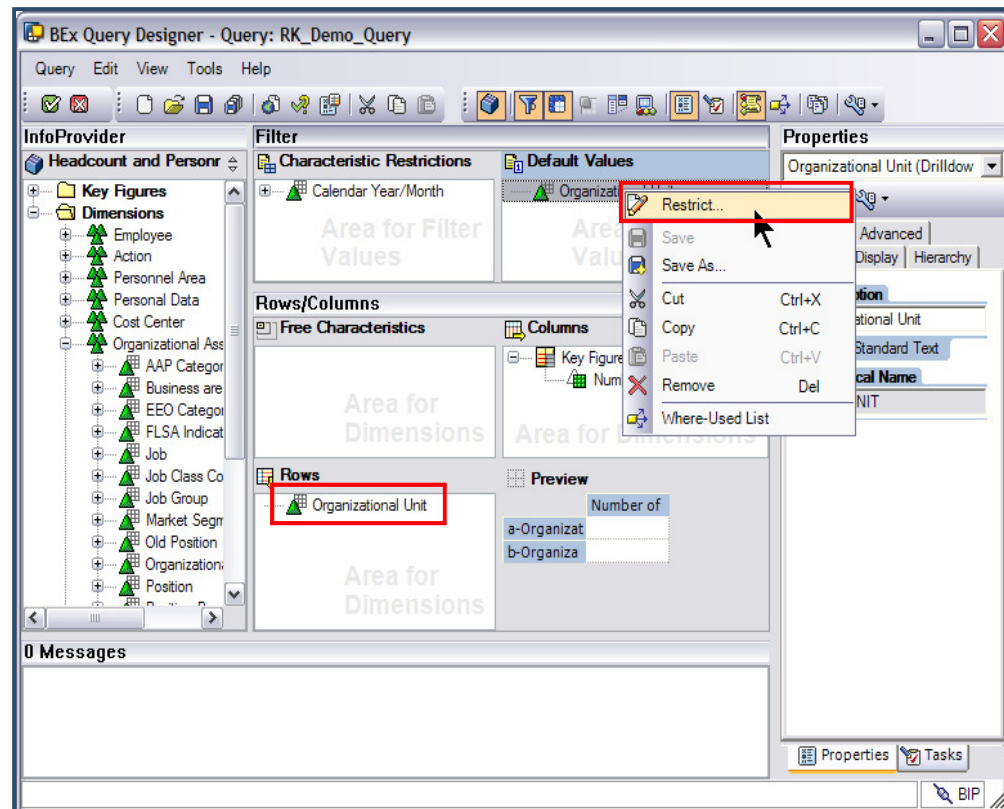
# Hierarchy Variables

**Hierarchy Variables** are Variables added to a Hierarchy Characteristic that prompt the user to enter a Hierarchy Variable prior to running a query. The Organizational Unit Hierarchy is the only Hierarchy available in BW/BI.

The example below uses the Headcount and Personnel Actions InfoProvider to show how to add the Organizational Unit Hierarchy Variable to the Organizational Unit Hierarchy. This will prompt the user to enter an Organizational Unit Hierarchy prior to running a query.

To add a Hierarchy Variable to a Hierarchy:

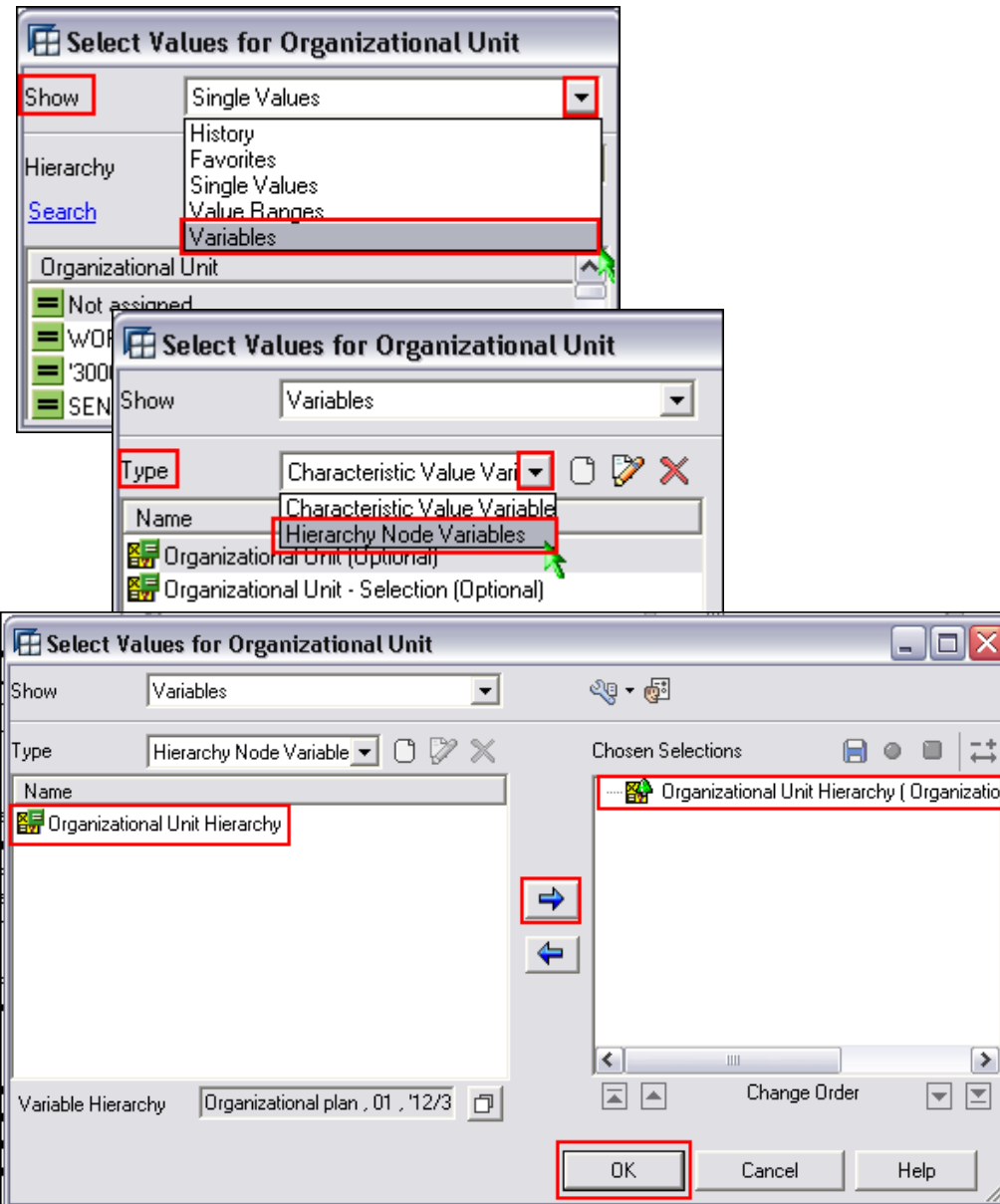
1. Drag&Drop the Organizational Unit Characteristic to the Rows section of the query.
2. Right click on the Organizational Unit Characteristic in the Default Values section to open the Context Menu.
3. Select Restrict.



# Hierarchy Variables

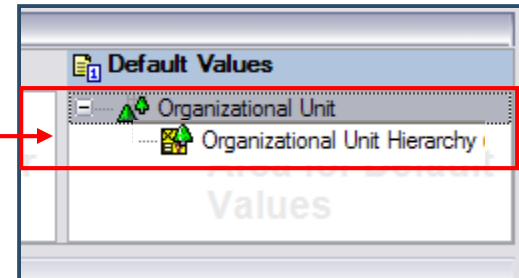
Result: The Selection Values for Organizational Unit screen will be displayed.

4. From the “Show” dropdown, select “Variables”.
5. From the “Type” dropdown, select “Hierarchy Node Variables”:
6. Select “Organizational Unit Hierarchy”.
7. Click the arrow to “Move to Selection”.
8. Click OK.



# Hierarchy Variables

Result: The Organizational Unit Hierarchy variable has been added to the Organizational Unit Characteristic



The user will be prompted to enter an Organizational Unit Hierarchy variable prior to running the ad hoc query.

The screenshot shows a 'Variable Entry' dialog box. It has a section for 'Available Variants' with buttons for 'Save', 'Save As...', and 'Delete', and a link for 'Show Variable Personalization'. Below this is a table titled 'General Variables' with columns 'Variable', 'Current Selection', and 'Description'. The row for 'Organizational Unit Hierarchy' is highlighted with a red box. A red arrow points from the text 'The user will be prompted to enter an Organizational Unit Hierarchy variable prior to running the ad hoc query.' to the 'Organizational Unit Hierarchy' row. At the bottom, there are 'OK' and 'Check' buttons, with 'OK' also highlighted by a red box.

Variable	Current Selection	Description
Personnel Area - Select (Optional)		
Organizational Unit Hierarchy	+31007726(0ORGUNIT)	31007726 DEPT OF ENTERPRISE SERVICES

# Basic Formulas

**Formulas** are calculations used to create custom Key Figures in the ad hoc query. Formulas use existing Key Figures to calculate a new Key Figure.

Key Figures that are used in a formula must be added to the Key Figures structure. For example, to create a basic formula that calculates the Average Annual Salary of employees, the Number of Employees and Annual Salary Key Figures must be added to the Key Figures structure of the query.

**BEx Query Designer - Query: Demo Key Figure**

Query Edit View Tools Help

**InfoProvider**

- Headcount And Personnel Actio
  - Key Figures
    - Calculated Key Figure
    - Age in Months
    - Age in Years
    - Annual Salary**
    - Cap. Utilization Lvl
    - Employment Percent
    - Headcount
    - Length of Service
    - Monthly Salary
    - New Annual Salary
    - Number of Actions
    - Number of Employees**
    - Present Pos Months
    - Prior Annual Salary
    - Salary Unit Amt
    - Service Months 44
    - State Srvc in Months
  - Dimensions
    - Employee
    - Action
    - Personnel Area

**Filter**

- Characteristic Restrictions
- Default Values
  - Personnel Area
  - Organizational Unit
  - Gender

**Rows/Columns**

- Free Characteristics
  - Organizational Unit
- Columns
  - Key Figures
    - Number of Employees
    - Annual Salary
- Rows
  - Personnel Area
  - Gender

**Preview**

	Number of	A
a-Personne	a-Gender	
	b-Gender	
b-Personne	a-Gender	
	b-Gender	

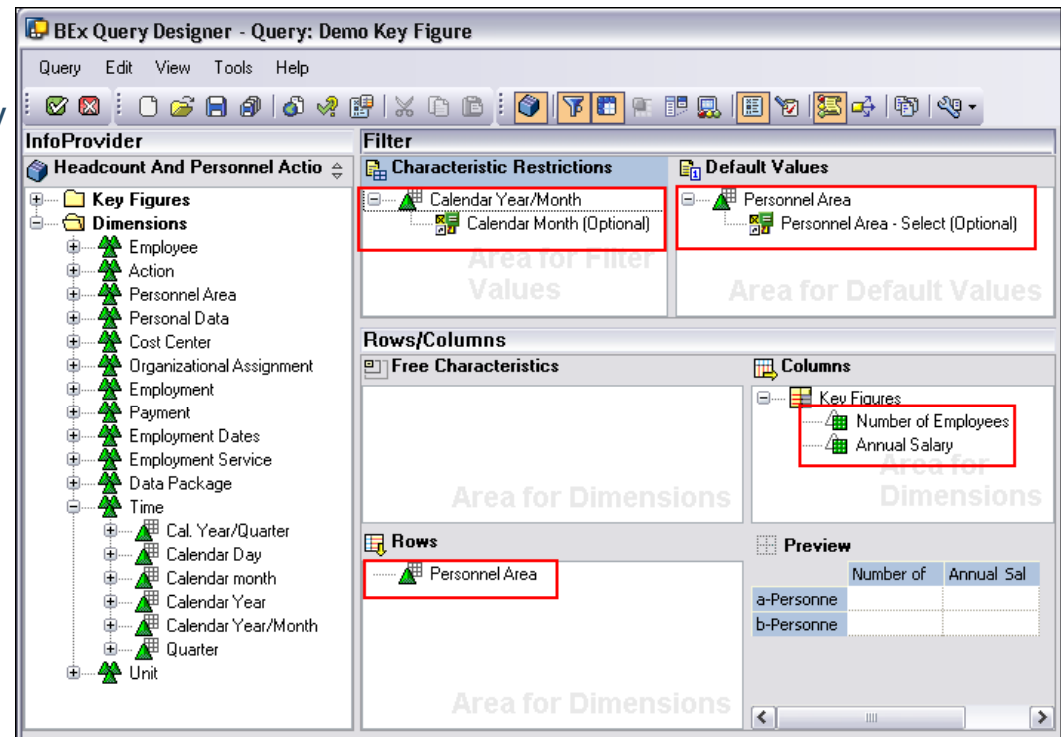
Add Key Figures that will be used in the formula to the key figures structure in the Columns section.



# Basic Formulas

The example below uses the Headcount InfoProvider to show how to create a formula that will calculate the average salary of employees in a Personnel Area:

1. Drag&Drop the Annual Salary Key Figure to the Columns section of the query.
2. Drag&Drop the Number of Employees Key Figure to the Columns section of the query.
3. Drag&Drop the Personnel Area Characteristic to the Rows section.
4. Add the “Personnel Area - Select (Optional)” Variable to the Personnel Area Characteristic in the Default Values section.
5. Drag&Drop the Calendar Year/Month Characteristic to the Filter Section.
6. Add the Calendar Month (Optional) variable to the Calendar Year/Month Characteristic in the Filter Section

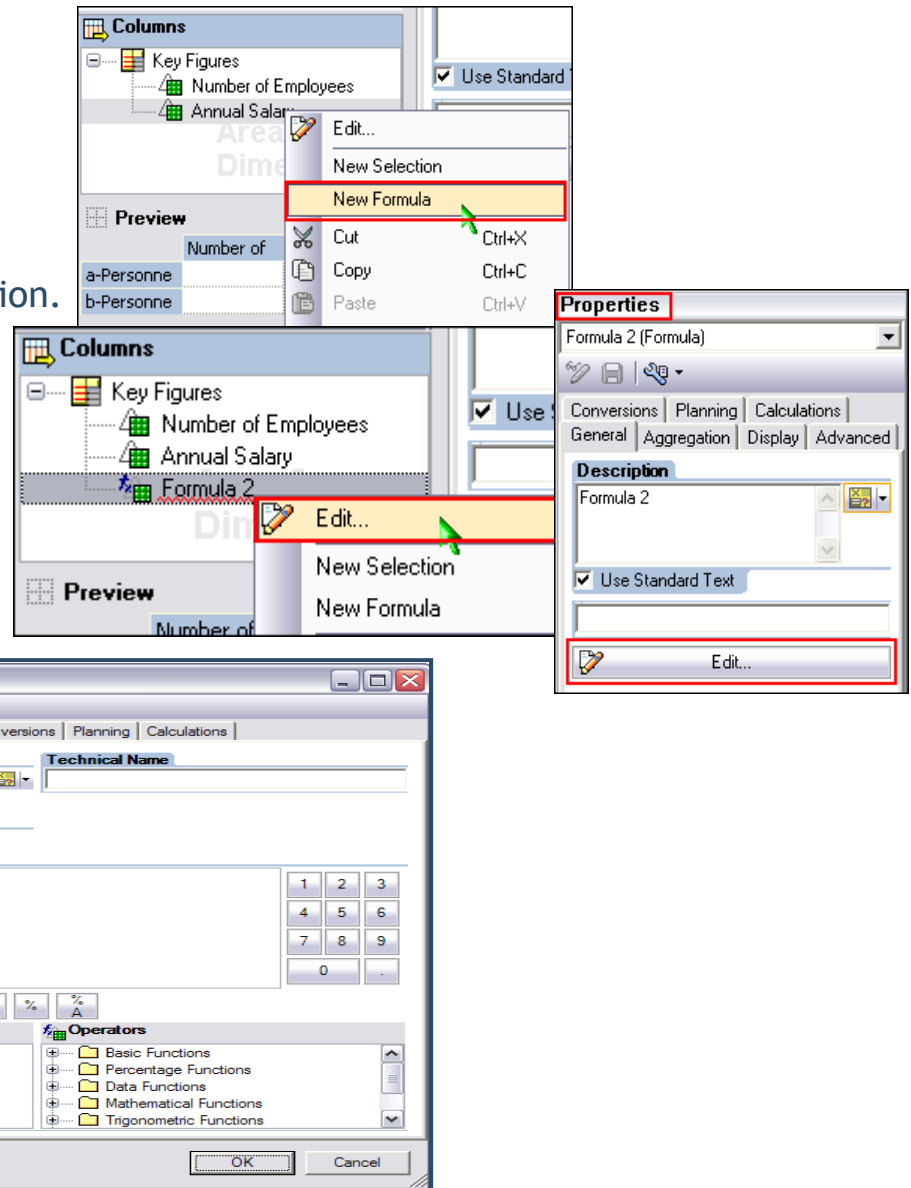


# Basic Formulas

5. Right mouse-click the any object in the Columns section to open the Context Menu.
6. Select New Formula.

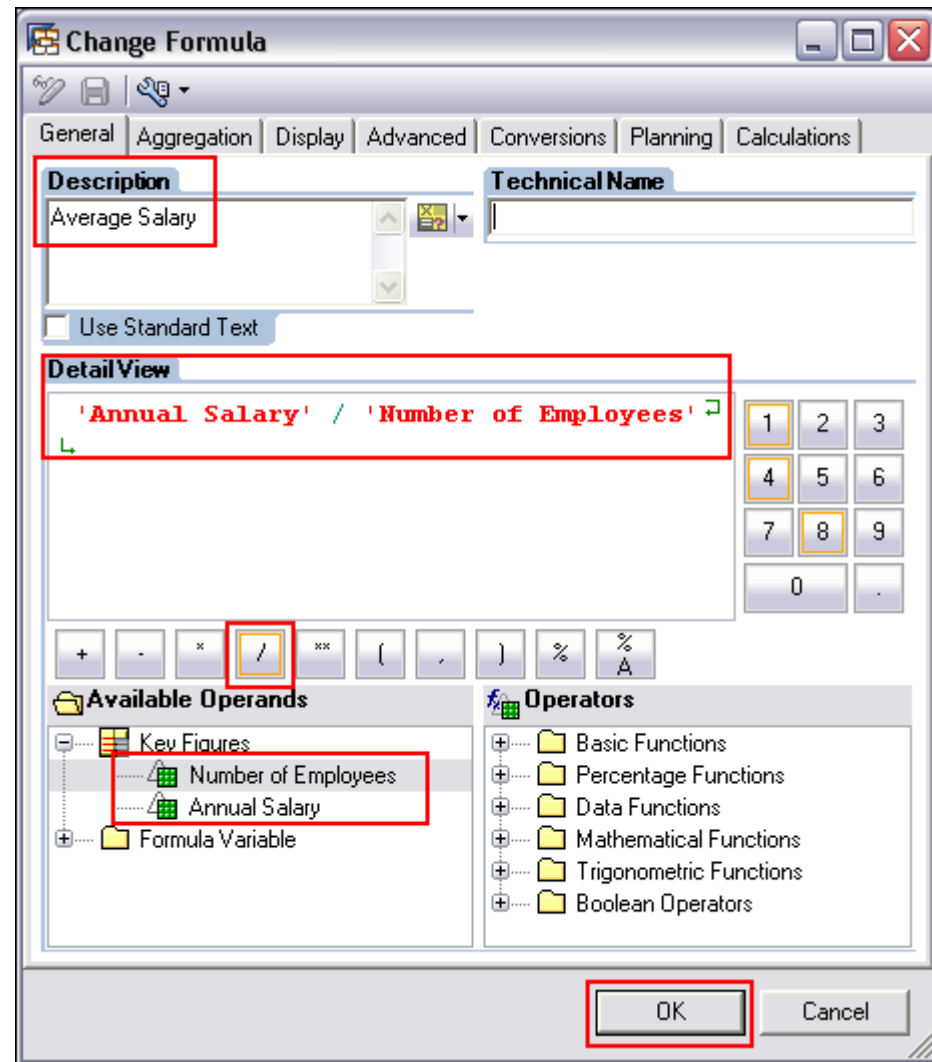
Result: The New Formula is added to the Column section.

7. Right click the new Formula and select “Edit”.  
**OR** Select the New Formula and click “Edit” in the Properties pane.  
**OR** double click new Formula.
7. The “Change Formula” box is displayed.



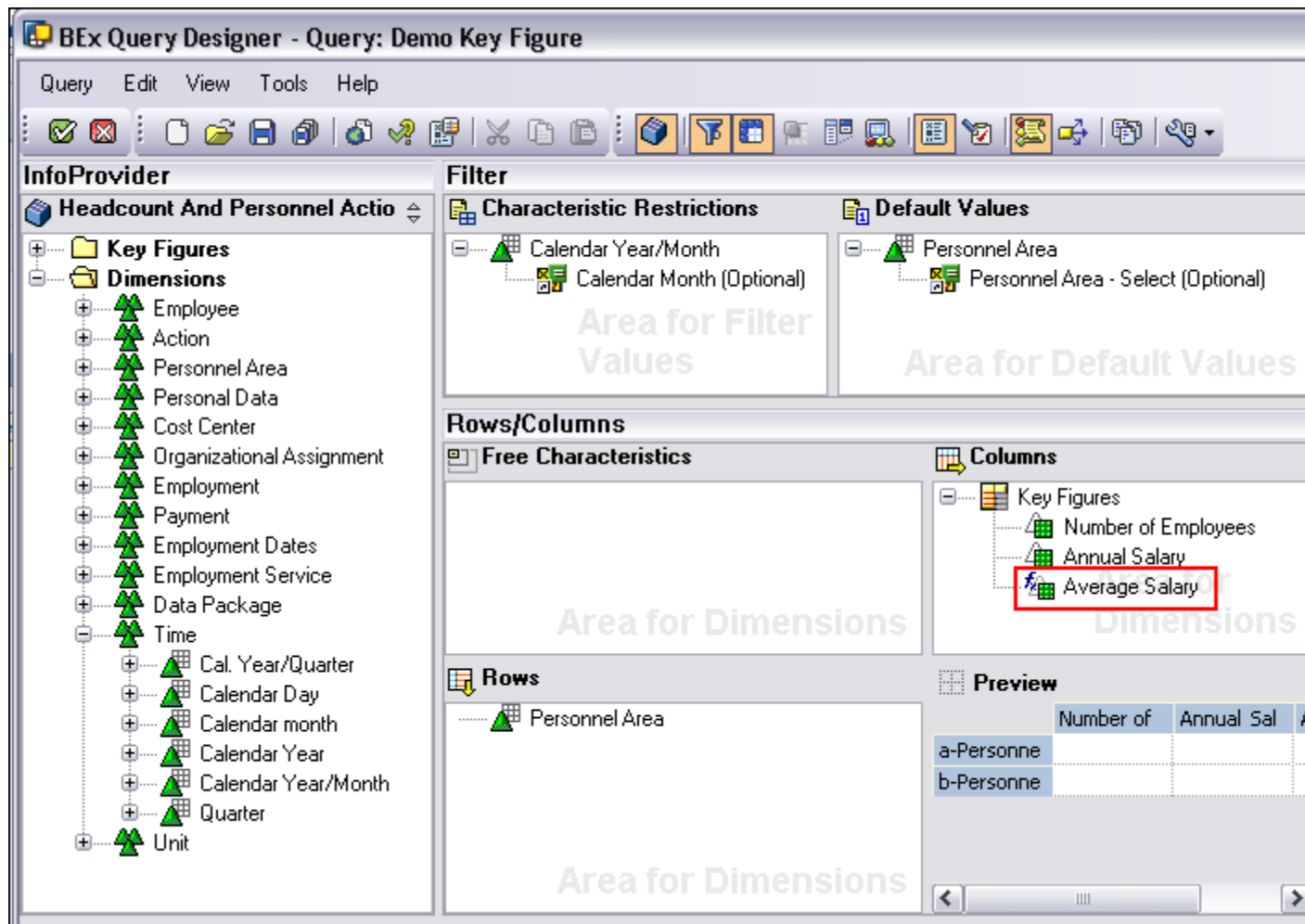
# Basic Formulas

9. Enter a description for the formula (in this example, “Average Salary”) in the description field.
10. Double click Annual Salary key figure to add it to the formula.
11. Click the Divide by symbol.
12. Double click the Number of Employees key figure to add it to the formula
13. Click OK to close the Change Formula screen



# Basic Formulas

Result: A new key figure has been added to the ad hoc query that will calculate the Average Salary of employees by Personnel Area:

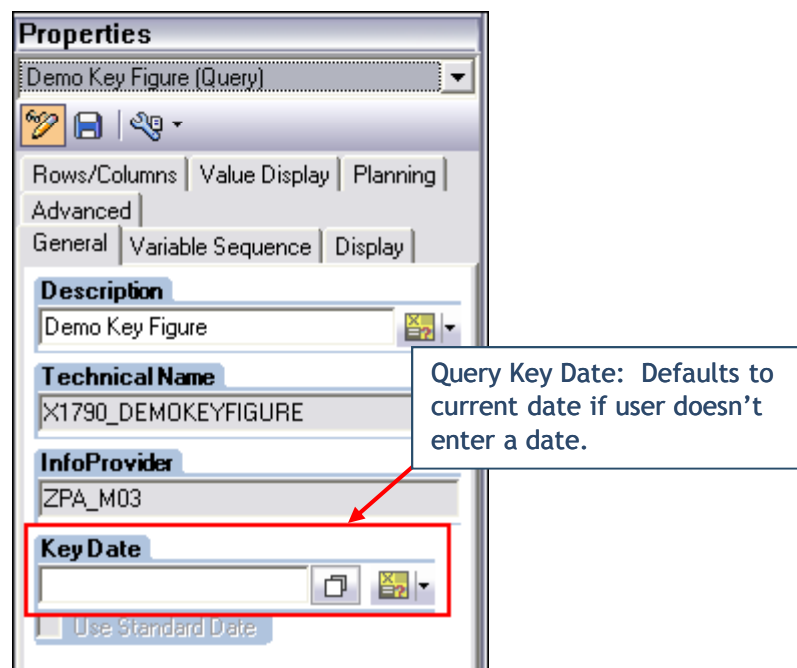
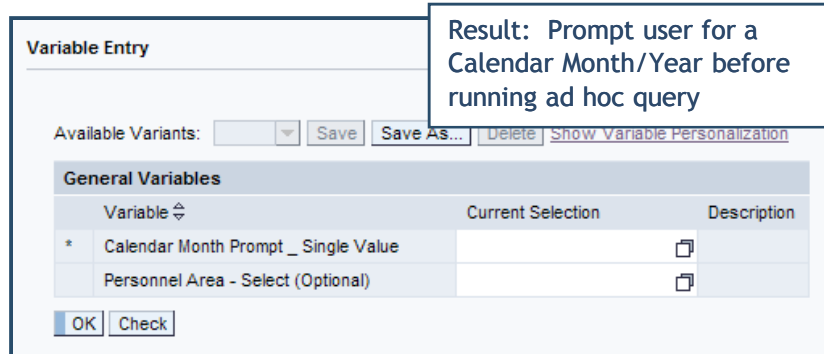
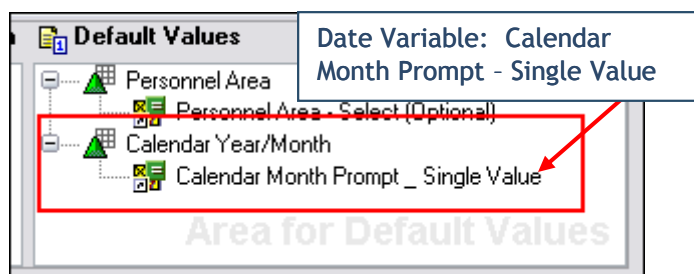


# Ad Hoc Query Dates

**Date Characteristics** are InfoObjects that can be added to a query from the Time dimension. Date Characteristics such as Calendar Days or Calendar Month/Year can be added to a query in Rows, Columns, Free Characteristics or Filters.

When a Date Characteristic is used with a variable, Characteristics and Attributes in the query could report two different time periods:

- Characteristics in the query will be “as of” the date value input by the user in the Date Variable.
- Attributes in the query will be “as of” the Key Date set in the query properties.

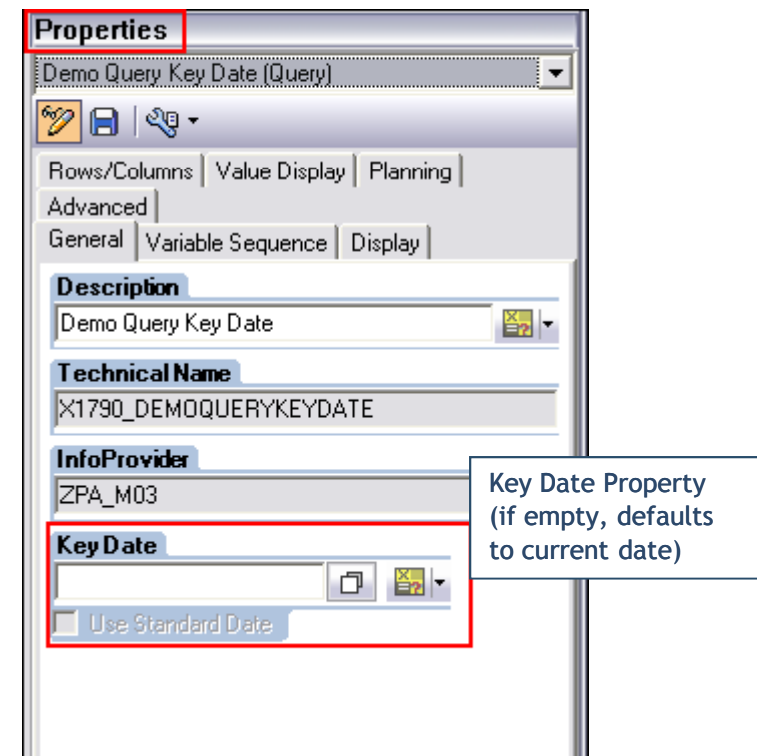
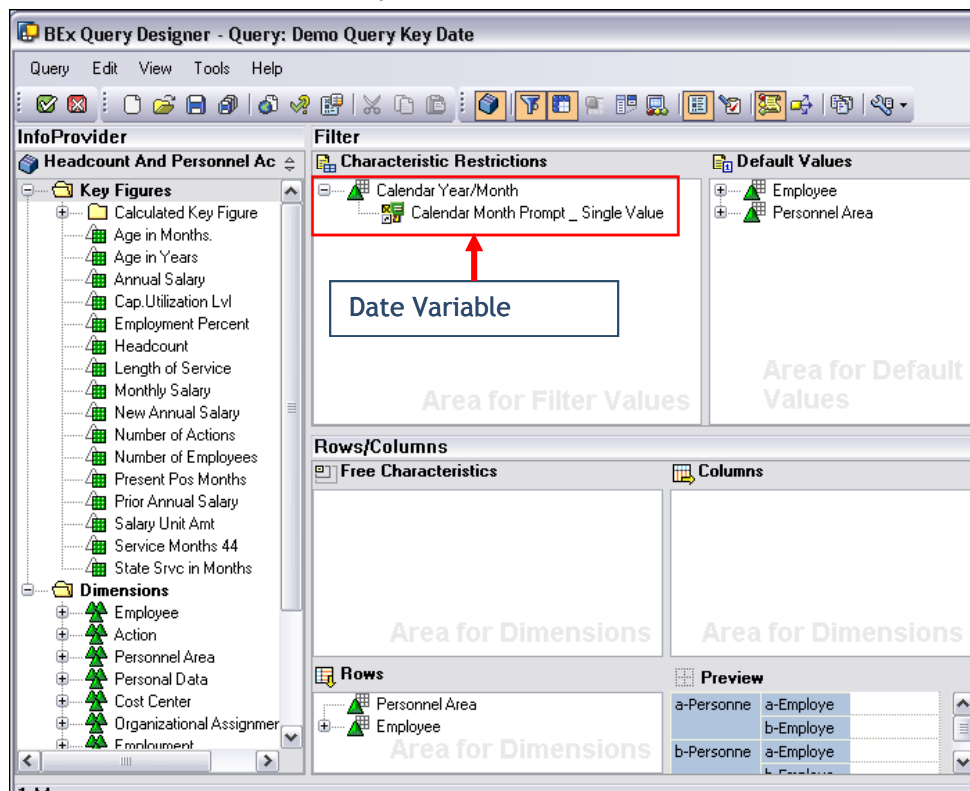


# Key Date

The **Key Date** represents the “as of” date for Attributes. Key Date is set from the Query Property settings of an ad hoc query.

Attributes and Characteristics in the query could report two different time periods when a Date Characteristic is used with a variable.

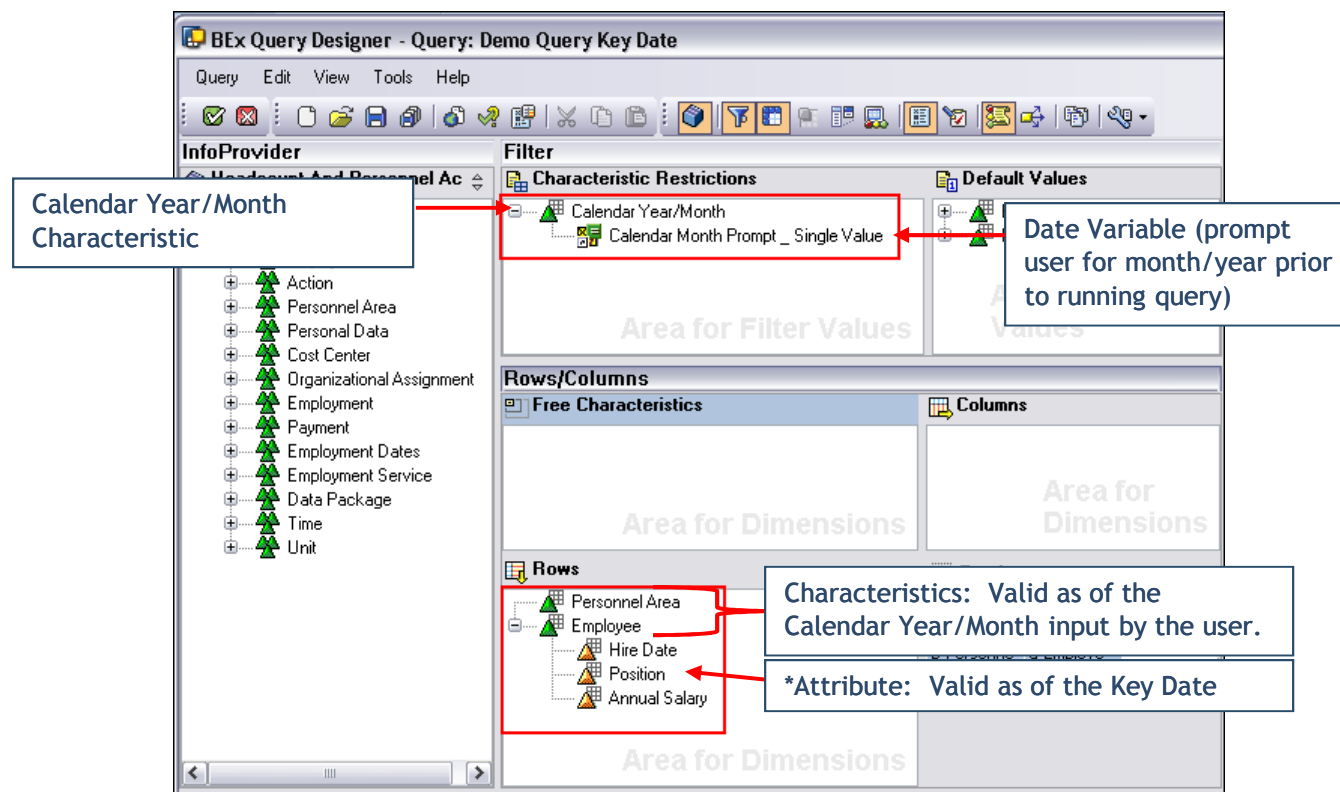
- Characteristics in the query will be “as of” the date value input by the user in the Date Variable.
- Attributes in the query will be “as of” the Key Date set in the query properties (if nothing is entered, the Key Date will default to the current date).



# Key Date

The example below shows InfoObjects of an ad hoc query that are related to Key Date.

- Attributes in the query results will be reported by the date values of the Key Date in the ad hoc query Properties. If the Key Date is left empty, the Key Date will default to the current date.
- If a Date Variable is added to a Date Characteristic in the query, Characteristics in the query results will be reported by the date input by the user from the Date Variable.



\*Attributes can be identified by the Technical Name: An Attribute includes the Characteristic Technical Name, followed by an underscore (\_) and the Attribute Technical Name



# Key Date

To ensure Attributes and Characteristics report the same time periods in the query results, the following options are available:

1. **Do not use a Date Variable**

If a Date Variable is not added to an ad hoc query, the Attributes and Characteristics will be valid as of the current date. The Key Date does not need to be set since it defaults to the current date.

2. **Manually set Key Date**

The Key Date can be manually set from the Query Property settings. If the Key Date is manually set, the value from the Key Date in the Query Property settings will be used each time the query is run.

If a variable value is input at query runtime:

- the value from the Key Date in the Query Property settings will be used for Attributes.
- the value from the variable will be used for Characteristics.

The following page will show two examples of manually setting the Key Date using a Calendar Year/Month variable and a Calendar Day variable.

# Key Date

The following example uses the “Calendar Month (Optional)” variable to show how the Key Date could be set if the calendar month is set to 8/2012:

Variable Entry

Available Variables: [dropdown] [Save] [Save As...] [Delete] [Show Variable Personalization]

Variable	Current Selection	Description
Personnel Area - Select (Optional)		
Calendar Month (Optional)	08/2012	08/2012

[OK] [Check]

User sets variable value at runtime

Example: Calendar Month (Optional) variable for 8/2012

Properties

Demo Query Key Date (Query)

Rows/Columns | Value Display | Planning | Advanced | General | Variable Sequence | Display

Description: Demo Query Key Date

Technical Name: X1790\_DEMOQUERYKEYDATE

InfoProvider: ZPA\_M03

Key Date: 08/31/2012

[Use Standard Date]

Example: Set Key Date property to the last day of the month selected from the Variables prompt - 8/2012

The following example uses the “Calendar Day” variable to show how the Key Date could be set if the calendar day is set to 8/16/2012:

Variable Entry

Available Variables: [dropdown] [Save] [Save As...] [Delete] [Show Variable Personalization]

Variable	Current Selection	Description
Personnel Area - Select (Optional)		
Calendar Day	08/16/2012	08/16/2012

[OK] [Check]

User sets variable value at runtime

Example: OCALDAY (OPTIONAL) variable for 8/16/2012

Properties

Demo Query Key Date (Query)

Rows/Columns | Value Display | Planning | Advanced | General | Variable Sequence | Display

Description: Demo Query Key Date

Technical Name: X1790\_DEMOQUERYKEYDATE

InfoProvider: ZPA\_M03

Key Date: 08/16/2012

[Use Standard Date]

Example: Set Key Date property to the same day of the day selected from the Variables prompt -8/16/2012

# Key Date

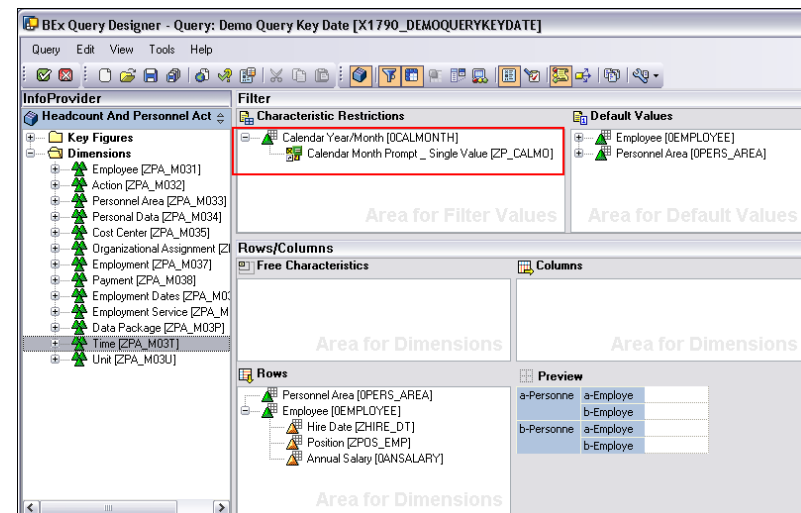
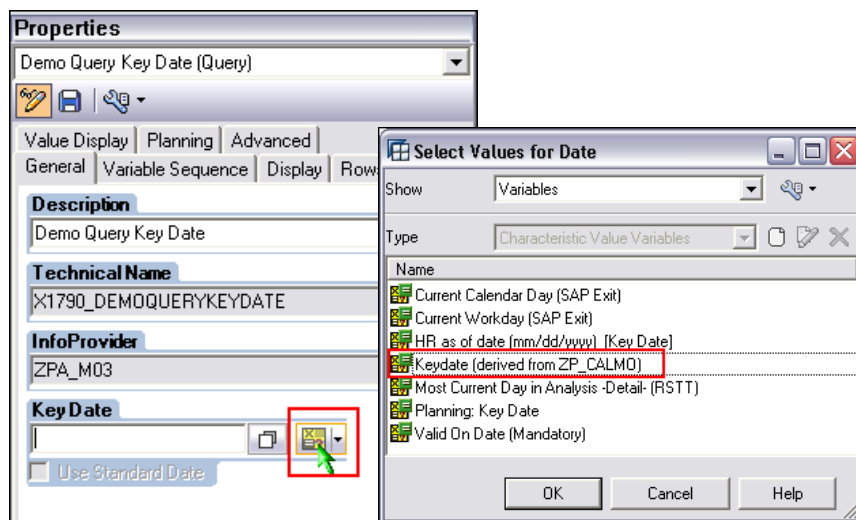
## 3. Use a Key Date Variable

The Key Date can be set to automatically match what the user enters into the date variable by using the Key Date variable “Key Date for ZP\_CALMO”.

The “Key Date for ZP\_CALMO” Key Date variable is used with the Date Variable “Calendar Month Prompt - Single Value” (ZP\_CALMO) variable. Using both of these variables ensures that Characteristics and Attributes data is being pulled from the same time period.


If a date variable value is input at query runtime:

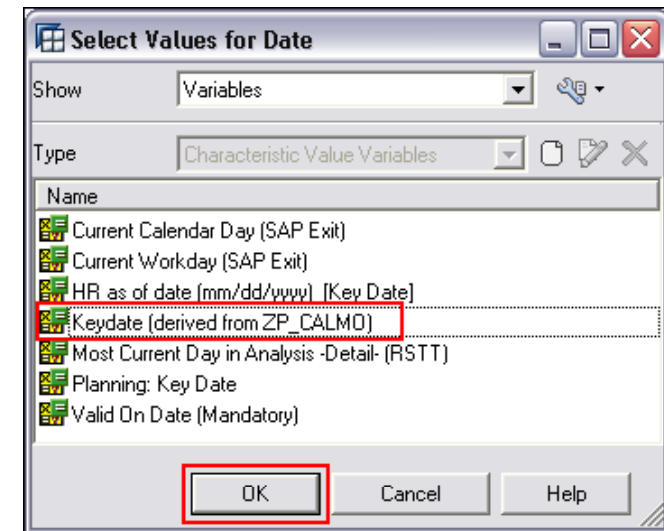
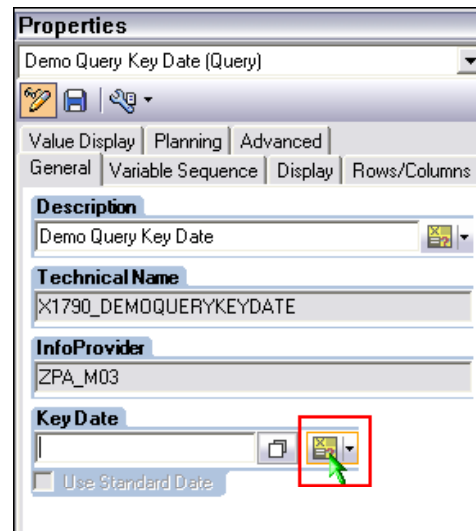
- the value from the “Key Date for ZP\_CALMO” variable for Query Key Date will automatically match what the user enters into the Date Variable.
- the value from the “Calendar Month Prompt - Single Value (ZP\_CALMO)” variable will be used for Characteristics.
- the value from the “Keydate (derived from ZP\_CALMO)” variable will be used for Attributes.



# Key Date

To set the Key Date property to the “Key Date for ZP\_CALMO” variable:

1. In the Properties box for the Query, click the variable  icon in the Key Date section.
2. In the Select values for Date, select “Keydate”.
3. Click OK.



Result: Key Date variable is added.

